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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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2143

DATE MAILED: 07/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/605,917

Applicant(s)

AVIANI ET AL.

Examiner

Thomas J. Mauro Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 58-92 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 58-92 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 03/22/2004.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

1. This action is responsive to the Request for Continued Examination filed on May 7, 2004. Previous claims 1-57 have been cancelled. Claims 58-92 are pending and are presented for examination. A formal action on the merits of claims 58-92 follows.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 58-92 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-55 of copending Application No. 09/606,418. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both recite analogous methods for redirecting traffic from a client to the nearest replica server chosen from a plurality of replica servers.

For example, claim 58 of the instant application calls for receiving a packet from a client having a destination identifier, adding a tag to the start packet to indicate packet should be forwarded to any replica duplicating content of requested server, storing the identifier and

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sending the packet to the server, cracking the acknowledgement packet prior to storing the first acknowledgement (ACK) packet and associating the source identifier of the ACK packet with the destination identifier of the start packet, encapsulating and sending the ACK packet to the client and inhibiting sending second (non-first) ACK packet to the client.

Similarly, claims 1-13 of application 09/606,418 call for receiving a packet traveling between a client and a server or replica, which inherently contains a destination identifier which allows the packet to be routed to its proper destination, adding a tag to the start packet to indicate the packet should be forwarded to any replica duplicating content of the requested server, storing the destination identifier of the start packet, storing and associating a source identifier of the ACK packet with the stored destination identifier of the start packet, sending the ACK packet to the client, cracking the packet to reveal source identifier and encapsulating the packet prior to sending to client and inhibiting sending second (non-first) ACK packet to the client.

Similarly, claims 61 and 62 of the instant application call for only tagging the start packet if it is associated with web data and wherein the start packet is associated with web data when it has a destination port utilized for accessing web data. Claim 8 of application 09/606,418 calls for these same limitations.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 58, 63, 68 and 91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brendel (U.S. 6,182,139) in view of Mogul (U.S. 6,097,882) and further in view of Malkin (U.S. 6,247,054).

Regarding claim 58, Brendel teaches a method of facilitating redirection of traffic between a server and a client to between the client and a selected one from a plurality of replicas, the method comprising:

receiving a packet from a client, the packet having a destination identifier associated with a server [Brendel -- Figure 8, Col. 11 lines 20-21 and Col. 16 lines 16-19 – First SYN packet, i.e. start packet, is generated and intercepted by the client side dispatcher. This packet obviously contains a destination identifier in order for it to be routed to its destination. The client side dispatcher can be located on a separate machine from the client];

storing the destination identifier of the start packet [Brendel -- Figure 8 and Col. 11 lines 21-22 – Dispatcher stores the packet and makes an entry in translation table];

when a first acknowledgement packet associated with the start packet is received first with respect to any other acknowledgement packets, storing and associating a source identifier of the first acknowledgement packet with the stored destination identifier of the start packet

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[Brendel -- Figure 8, Col. 11 lines 20-21 and lines 57-67 -- In order for the packets to go to the replica server when the destination address is that of the original server, an association of addresses in the address translation look-up table would be necessary to correlate the original servers address with that of the appropriate replica. The address translation table provides the correlation or association between the two identifiers];

after storing and associating the source identifier of the first acknowledgement packet, sending the first acknowledgement packet to the client **[Brendel -- Figure 8 (SYN+ACK (0) is shown sent back to client) and Col. 11 lines 44-45 -- The SYN+ACK packet is sent back to client];** and

when a second acknowledgement packet associated with the start packet is received after the first acknowledgement packet, inhibiting sending of the second acknowledgement to the client **[Brendel -- Figure 8 and Col. 11 lines 40-43 -- First to respond is selected and subsequent packets from other servers do not reach the client computers because the connection with these servers is closed by having the dispatcher send a reset RST packet].**

Brendel fails to explicitly teach tagging the start packet to indicate the request should be load-balanced to any server duplicating the content of the intended server, sending the packet towards the server, cracking the acknowledgement packet to obtain the source identifier prior to storing the replica's address and encapsulating the cracked acknowledgement packet with a source address prior to forwarding the acknowledgement packet to the client.

Mogul, however, teaches a transparent replica which sits between the server replicas and the clients **[Mogul -- Col. 3 lines 10-12]**. Upon receiving client requests, it decides which server replica to send the request to **[Mogul -- Col. 3 lines 23-29]** and sends the packets towards the

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server **[Mogul -- Col. 3 lines 32-36]**. Thus it is required and obvious that a flag would have been set in order for the transparent replica to know that the packets could be diverted to server replicas.

In addition, Brendel teaches that load balancing can be accomplished on the server side **[Brendel -- Col. 16 lines 12-14]** and that it is more powerful and has more capabilities if done server side **[Brendel -- Col. 5 lines 46-48]**.

In addition, Malkin teaches decapsulating, i.e. cracking, the packet to gain access to its data, i.e. the address **[Malkin -- Col. 4 lines 44-46]** and then encapsulating the packets in order to preserve the destination address of the original packet before being redirected **[Malkin -- Col. 3 lines 34-38]**.

In view of the teachings of Mogul and Malkin, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the tagging of start packets to indicate load balancing along with forwarding the packets to the server, as taught by Mogul, along with the encapsulating and cracking of packets, as taught by Malkin, into the invention of Brendel, in order to increase the power and performance of the load balancer and to provide greater fault tolerance in addition to providing a means for preserving the integrity of the original information, i.e. the address contained within the contents of the packets.

Regarding claim 63, Brendel-Mogul-Malkin teach the invention substantially as claimed, a computer system for facilitating redirection of traffic between a server and a client to between the client and a selected one from a plurality of replicas, the computer system comprising:

a memory; and

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a processor coupled to the memory [**Brendel -- Col. 18 lines 52-67 -- Computers inherently contain one or more processors, memory, and various other components. Therefore, by teaching a computer, the reference teaches a processor and memory for carrying out the methods**]. The remaining limitations recited in claim 63 are similar to those claimed in the method of claim 58. Therefore, claim 63 is rejected under the same rationale.

Regarding claim 68, Brendel-Mogul-Malkin teach the invention substantially as claimed, a computer program product for facilitating redirection of traffic between a server and a client to between the client and a selected one from a plurality of replicas, the computer program product comprising:

at least one computer readable medium;

computer program instructions stored within the at least one computer readable product

[**Brendel -- Col. 19 lines 33-52 -- Instructions for carrying out methods are stored on computer readable medium**].

The remaining limitations of claim 68 are similar to the limitations of method claim 58.

Therefore, claim 68 is rejected under the same rationale.

Regarding claim 91, this is an apparatus claim corresponding to the method claimed in claim 58 above. It has similar limitations; therefore, claim 91 is rejected under the same rationale.

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6. Claims 73, 79, 85 and 92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brendel (U.S. 6,182,139) in view of Mogul (U.S. 6,097,882).

Regarding claim 73, Brendel teaches a method of facilitating redirection of traffic between a server and a client to between the client and a nearest replica selected from a plurality of replicas, the method comprising:

at the client side, receiving a packet that is traveling between a client and a server or between the client and a replica [**Brendel -- Figure 8, Col. 11 lines 20-21 and Col. 16 lines 16-19 -- First SYN packet, i.e. start packet, is generated and intercepted by the client side dispatcher. This packet obviously contains a destination identifier in order for it to be routed to its destination. The client side dispatcher can be located on a separate machine from the client**];

when the received packet is an acknowledgement packet that is received first and spoofs the server, obtaining a source identifier of the replica from the acknowledgement when the acknowledgement originates from the replica [**Brendel -- Figure 8, Col. 11 lines 20-21 and lines 57-67 -- In order for the packets to go to the replica server when the destination address is that of the original server, an association of addresses in the address translation look-up table would be necessary to correlate the original servers address with that of the appropriate replica. The address translation table provides the correlation or association between the two identifiers**] and then sending the acknowledgement packet to the client [**Brendel -- Figure 8 (SYN+ACK (0) is shown sent back to client) and Col. 11 lines 44-45 -- The SYN+ACK packet is sent back to client**];

when the received packet is an acknowledgement packet that is not received first and spoofs the server, inhibiting sending of the second acknowledgement to the client [**Brendel -- Figure 8 and Col. 11 lines 40-43 -- First to respond is selected and subsequent packets from other servers do not reach the client computers because the connection with these servers is closed by having the dispatcher send a reset RST packet**]; and

when the received packet is a subsequent packet received after the start packet and the acknowledgement packet, altering the subsequent packet so that it goes to the replica when the subsequent packet originates from the client, wherein the alteration is based on the obtained source identifier from the acknowledgement packet [**Brendel -- Col. 11 lines 46-50 -- After receiving the SYN + ACK packet, subsequent requests are intercepted and the destination address is changed to the relocated server, i.e. replica address**].

Brendel fails to explicitly teach tagging the start packet to indicate the request should be load-balanced to any server duplicating the content of the intended server.

Mogul, however, teaches a transparent replica which sits between the server replicas and the clients [**Mogul -- Col. 3 lines 10-12**]. Upon receiving client requests, it decides which server replica to send the request to [**Mogul -- Col. 3 lines 23-29**] and sends the packets towards the server [**Mogul -- Col. 3 lines 32-36**]. Thus it is required and obvious that a flag would have been set in order for the transparent replica to know that the packets could be diverted to server replicas.

In addition, Brendel teaches that load balancing can be accomplished on the server side [**Brendel -- Col. 16 lines 12-14**] and that it is more powerful and has more capabilities if done server side [**Brendel -- Col. 5 lines 46-48**].

In view of the teachings of Mogul, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the tagging of start packets to indicate load balancing along with forwarding the packets to the server, as taught by Mogul into the invention of Brendel, in order to increase the power and performance of the load balancer and to provide greater fault tolerance.

Regarding claim 79, Brendel-Mogul teach a computer system operable to facilitate redirection of traffic between a server and a client to between the client and a nearest replica selected from a plurality of replicas, the computer system comprising:

a memory; and

a processor coupled to the memory,

wherein at least one of the memory and the processor are adapted to provide [Brendel --

Claim 13 Col. 18 lines 52-67 – It is obvious to one of ordinary skill in the art of computers that all computers consist of one or more processors, memory, and various other components. Therefore, by teaching a computer system, it is obvious that a memory and a processor coupled to the memory are taught]:

at the client side, receiving a packet that is traveling between a client and a server or between the client and a replica [Brendel -- Figure 8, Col. 11 lines 20-21 and Col. 16 lines 16-19 – First SYN packet, i.e. start packet, is generated and intercepted by the client side dispatcher. This packet obviously contains a destination identifier in order for it to be routed to its destination. The client side dispatcher can be located on a separate machine from the client].

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The remaining limitations of claim 79 are similar to the limitations of claim 73 above.

Therefore, they are rejected under the same rationale.

Regarding claim 85, Brendel-Mogul teach a computer program product comprising:

at least one computer readable medium; computer program instructions stored within at least one computer readable product **[Brendel -- Claim 13 Col. 18 lines 52-67 -- It is obvious to one of ordinary skill in the art of computers that all computers consist of memory storing code/instructions for executing processes. Therefore, by teaching a computer system, it is obvious that a memory and instructions/code are taught]** configured to cause a processing device to:

receive a packet from a client, the packet having a destination identifier associated with a server **[Brendel -- Figure 8, Col. 11 lines 20-21 and Col. 16 lines 16-19 -- First SYN packet, i.e. start packet, is generated and intercepted by the client side dispatcher. This packet obviously contains a destination identifier in order for it to be routed to its destination. The client side dispatcher can be located on a separate machine from the client].**

The remaining limitations of claim 85 are similar to the limitations of claim 73 above.

Therefore, they are rejected under the same rationale.

Regarding claim 92, this is an apparatus claim corresponding to the method claimed in claim 73 above. It has similar limitations; therefore, claim 92 is rejected under the same rationale.

7. Claims 58-72, 74-75, 78, 80-81, 84, 86-87, 90 and 91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brendel (U.S. 6,182,139) in view of He et al. (U.S. 6,671,259) and further in view of Malkin (U.S. 6,247,054).

Regarding claim 58, Brendel teaches a method of facilitating redirection of traffic between a server and a client to between the client and a selected one from a plurality of replicas, the method comprising:

receiving a packet from a client, the packet having a destination identifier associated with a server [**Brendel -- Figure 8, Col. 11 lines 20-21 and Col. 16 lines 16-19 -- First SYN packet, i.e. start packet, is generated and intercepted by the client side dispatcher. This packet obviously contains a destination identifier in order for it to be routed to its destination. The client side dispatcher can be located on a separate machine from the client**];

storing the destination identifier of the start packet [**Brendel -- Figure 8 and Col. 11 lines 21-22 -- Dispatcher stores the packet and makes an entry in translation table**];

when a first acknowledgement packet associated with the start packet is received first with respect to any other acknowledgement packets, storing and associating a source identifier of the first acknowledgement packet with the stored destination identifier of the start packet [**Brendel -- Figure 8, Col. 11 lines 20-21 and lines 57-67 -- In order for the packets to go to the replica server when the destination address is that of the original server, an association of addresses in the address translation look-up table would be necessary to correlate the**

original servers address with that of the appropriate replica. The address translation table provides the correlation or association between the two identifiers];

after storing and associating the source identifier of the first acknowledgement packet, sending the first acknowledgement packet to the client [**Brendel -- Figure 8 (SYN+ACK (0) is shown sent back to client) and Col. 11 lines 44-45 – The SYN+ACK packet is sent back to client];** and

when a second acknowledgement packet associated with the start packet is received after the first acknowledgement packet, inhibiting sending of the second acknowledgement to the client [**Brendel -- Figure 8 and Col. 11 lines 40-43 – First to respond is selected and subsequent packets from other servers do not reach the client computers because the connection with these servers is closed by having the dispatcher send a reset RST packet].**

Brendel fails to explicitly teach tagging the start packet to indicate the request should be load-balanced to any server duplicating the content of the intended server, sending the packet towards the server, cracking the acknowledgement packet to obtain the source identifier prior to storing the replica's address and encapsulating the cracked acknowledgement packet with a source address prior to forwarding the acknowledgement packet to the client.

He, however, teaches when the packet is a start packet, at the client side, adding a tag to the start packet to indicate that the start packet should be forwarded by a device other than a client side device to any replica that duplicates the data content of the server [**He -- Col. 3 lines 49-51, Col. 4 lines 1-4 and Col. 11 lines 23-27 – System allows client to decide whether requests are to be “load balanced” or not, i.e. tagged. Hence, before arriving at the server side, a tag or bit in the packet would be required to have been set to identify whether or not the request is**

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the be "load balanced". By setting this, LB server will forward the packet to any one of the servers amongst the group of servers it load balances], and forwarding the requests towards the server to be routed by a device other than a client side device to one of these replicas [He -- **Figure 1, Col. 3 lines 49-54 and Col. 6 lines 61-67 – Request is sent to LB server (server-side) to be load balanced, if tagged. LB server selects one of the multiple servers, based upon load and other criteria, to service the client]**.

In addition, Brendel teaches that load balancing can be accomplished on the server side [Brendel -- **Col. 16 lines 12-14]** and that it is more powerful and has more capabilities if done server side [Brendel -- **Col. 5 lines 46-48]**.

In addition, Malkin teaches decapsulating, i.e. cracking, the packet to gain access to its data, i.e. the address [Malkin -- **Col. 4 lines 44-46]** and then encapsulating the packets in order to preserve the destination address of the original packet before being redirected [Malkin -- **Col. 3 lines 34-38]**.

In view of the teachings of He and Malkin, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the tagging of start packets to indicate load balancing along with forwarding the packets to the server, as taught by He, along with the encapsulating and cracking of packets, as taught by Malkin, into the invention of Brendel, in order to increase the power and capabilities of the load balancer and to give the user more control to let he/she decide if their requests should be load balanced in addition to providing a means for preserving the integrity of the original information, i.e. the address contained within the contents of the packets.

Regarding claim 59, Brendel-He-Malkin teach the invention substantially as claimed, as aforementioned in claim 58 above, further comprising:

when a subsequent packet associated with the start packet is received that is not a start packet or an acknowledgement packet, replacing a destination identifier of the subsequent packet with the source identifier stored for the acknowledgement packet when the subsequent packet originates from the client [**Brendel -- Col. 11 lines 46-50 – After receiving the SYN + ACK packet, subsequent requests are intercepted and the destination address is changed to the relocated server, i.e. replica address**]; and

forwarding the altered subsequent packet to its destination [**Brendel -- Col. 11 lines 50-52 – Packet is transmitted to server for the requested data**].

Regarding claim 60, Brendel-He-Malkin teach the invention substantially as claimed, as aforementioned in claim 59 above, including wherein the subsequent packet is only modified when the destination identifier of the subsequent packet equals the destination identifier stored for the associated start packet [**Brendel -- Col. 11 lines 19-21, lines 44-53 and lines 63-67 – Address translation table correlates original server IP address to relocated, i.e. replica, server IP address. URL request packets would only be modified if the destination address or identifier, when looked up in the address translation table, matched one previously stored during the multicast load balancing**].

Regarding claim 61, Brendel-He-Malkin teach the invention substantially as claimed, as aforementioned in claim 58 above, including wherein the start packet is only tagged when the start packet is associated with web data [**Brendel -- Col. 15 lines 54-55 – In the current embodiment, only URL's, i.e. web data, are to be "load balanced", which He discloses tagging the packets (He -- Col. 11 lines 23-27 – System allows client to decide whether requests are to be "load balanced" or not, i.e. tagged. Hence, before arriving at the server side, a tag or bit in the packet would be required to have been set to identify whether or not the request is the be "load balanced")]**], and the method further comprising sending the start packet to the server without the tag when the start packet is not associated with web data [**Brendel -- Col. 16 lines 4-8 – While "other internet traffic" could be implemented with this system, currently it is only applied to web data]**].

Regarding claim 62, Brendel-He-Malkin teach the invention substantially as claimed, as aforementioned in claim 61 above, including wherein the start packet is associated with web data when the start packet has a destination port utilized for accessing web data. While not explicitly taught in the reference, Examiner has taken Official Notice that it would have been obvious to one of ordinary skill in the art that one can quickly and easily discern web data from other Internet traffic by looking at the destination port number i.e. 80. Because using port 80 is widely known in the art for accessing web data, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a check for web data by destination port number into the invention of Brendel-He-Malkin in order to quickly and easily obtain the type of data from the packet.

Applicant has failed to seasonably challenge the Examiner's assertions of well-known subject matter in the previous Office action(s) pursuant to the requirements set forth under MPEP §2144.03. A "seasonable challenge" is an explicit demand for evidence set forth by Applicant in the next response. Accordingly, the claim limitations the Examiner considered as "well known" in the first Office action, i.e. start packet is associated with web data when the packet has a destination port utilized for web data, are now established as admitted prior art of record for the course of the prosecution. See *In re Chevenard*, 139 F.2d 71, 60 USPQ 239 (CCPA 1943).

Regarding claim 63, Brendel-He-Malkin teach the invention substantially as claimed, a computer system for facilitating redirection of traffic between a server and a client to between the client and a selected one from a plurality of replicas, the computer system comprising:

a memory; and

a processor coupled to the memory [**Brendel -- Col. 18 lines 52-67 – Computers inherently contain one or more processors, memory, and various other components. Therefore, by teaching a computer, the reference teaches a processor and memory for carrying out the methods**]. The remaining limitations recited in claim 63 are similar to those claimed in the method of claim 58. Therefore, claim 63 is rejected under the same rationale.

Regarding claims 64-67, these are system claims corresponding to the method claimed in claims 59-62 above. They have similar limitations; therefore, claims 64-67 are rejected under the same rationale.

Regarding claim 68, Brendel-He-Malkin teach the invention substantially as claimed, a computer program product for facilitating redirection of traffic between a server and a client to between the client and a selected one from a plurality of replicas, the computer program product comprising:

at least one computer readable medium;

computer program instructions stored within the at least one computer readable product

[Brendel -- Col. 19 lines 33-52 – Instructions for carrying out methods are stored on computer readable medium].

The remaining limitations of claim 68 are similar to the limitations of method claim 58. Therefore, claim 68 is rejected under the same rationale.

Regarding claims 69-72, these are system claims corresponding to the method claimed in claims 59-62 above. They have similar limitations; therefore, claims 69-72 are rejected under the same rationale.

Regarding claim 74, Brendel-He teach the invention substantially as claimed, as aforementioned in claim 73 above, including wherein the source identifier of the replica is obtained from the acknowledgement packet **[Brendel -- Col. 11 lines 40-45 – Before the dispatcher changes the source address to the original server's source address upon receiving the SYN + ACK packet, the dispatcher must first read the SYN + ACK packet to find out the source identifier of the server that responded in the timeliest manner].**

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Brendel fails to explicitly teach cracking the acknowledgement packet to obtain the source identifier.

Malkin, however, teaches decapsulating, i.e. cracking, the packet to gain access to its data, i.e. the address [**Malkin -- Col. 4 lines 44-46**] after having encapsulated the packets in order to preserve the destination address of the original packet before being redirected [**Malkin -- Col. 3 lines 34-38**].

In view of the teachings of Malkin, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the cracking and encapsulating of packets, as taught by Malkin into the invention of Brendel-He, in order to gain access to the information contained within the packet which was encapsulated to provide a means for preserving the integrity of the original information, i.e. the address contained within the contents of the packets.

Regarding claim 75, Brendel-He-Malkin teach the invention substantially as claimed, as aforementioned in claim 74 above, including re-encapsulating the cracked acknowledgement packet prior to sending it to the client [**Malkin -- Col. 3 lines 34-38 -- Destination address is preserved by encapsulating the packet**].

Regarding claim 78, Brendel-He-Malkin teach the invention substantially as claimed, including wherein the subsequent packet is altered by encapsulating [**Malkin -- Col. 3 lines 34-38 -- Destination address is preserved by encapsulating the packet**] the subsequent packet with a destination identifier of the start packet [**Brendel -- Col. 11 lines 46-50 -- After receiving**

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the SYN + ACK packet, subsequent requests are intercepted and the destination address is changed to the relocated server, i.e. replica address].

Regarding claims 80, 81 and 84, these are computer system claims corresponding to the method claimed in claims 74, 75 and 78 above. They have similar limitations; therefore, claims 80, 81 and 84 are rejected under the same rationale.

Regarding claims 86, 87 and 90, these are computer program product claims corresponding to the method claimed in claims 74, 75 and 78 above. They have similar limitations; therefore, claims 86, 87 and 90 are rejected under the same rationale.

Regarding claim 91, this is an apparatus claim corresponding to the method claimed in claim 58 above. It has similar limitations; therefore, claim 91 is rejected under the same rationale.

8. Claims 73, 76-77, 79, 82-83, 85, 88-89 and 92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brendel (U.S. 6,182,139) in view of He et al. (U.S. 6,671,259).

Regarding claim 73, Brendel teaches a method of facilitating redirection of traffic between a server and a client to between the client and a nearest replica selected from a plurality of replicas, the method comprising:

at the client side, receiving a packet that is traveling between a client and a server or between the client and a replica [Brendel -- Figure 8, Col. 11 lines 20-21 and Col. 16 lines 16-19 -- First SYN packet, i.e. start packet, is generated and intercepted by the client side dispatcher. This packet obviously contains a destination identifier in order for it to be routed to its destination. The client side dispatcher can be located on a separate machine from the client];

when the received packet is an acknowledgement packet that is received first and spoofs the server, obtaining a source identifier of the replica from the acknowledgement when the acknowledgement originates from the replica [Brendel -- Figure 8, Col. 11 lines 20-21 and lines 57-67 -- In order for the packets to go to the replica server when the destination address is that of the original server, an association of addresses in the address translation look-up table would be necessary to correlate the original servers address with that of the appropriate replica. The address translation table provides the correlation or association between the two identifiers] and then sending the acknowledgement packet to the client [Brendel -- Figure 8 (SYN+ACK (0) is shown sent back to client) and Col. 11 lines 44-45 -- The SYN+ACK packet is sent back to client];

when the received packet is an acknowledgement packet that is not received first and spoofs the server, inhibiting sending of the second acknowledgement to the client [Brendel -- Figure 8 and Col. 11 lines 40-43 -- First to respond is selected and subsequent packets from other servers do not reach the client computers because the connection with these servers is closed by having the dispatcher send a reset RST packet]; and

when the received packet is a subsequent packet received after the start packet and the acknowledgement packet, altering the subsequent packet so that it goes to the replica when the subsequent packet originates from the client, wherein the alteration is based on the obtained source identifier from the acknowledgement packet **[Brendel -- Col. 11 lines 46-50 – After receiving the SYN + ACK packet, subsequent requests are intercepted and the destination address is changed to the relocated server, i.e. replica address]**.

Brendel fails to explicitly teach tagging the start packet to indicate the request should be load-balanced to any server duplicating the content of the intended server.

He, however, teaches when the packet is a start packet, at the client side, adding a tag to the start packet to indicate that the start packet should be forwarded by a device other than a client side device to any replica that duplicates the data content of the server **[He -- Col. 11 lines 23-27 – System allows client to decide whether requests are to be “load balanced” or not, i.e. tagged. Hence, before arriving at the server side, a tag or bit in the packet would be required to have been set to identify whether or not the request is the be “load balanced”]**.

In addition, Brendel teaches that load balancing can be accomplished on the server side **[Brendel -- Col. 16 lines 12-14]** and that it is more powerful and has more capabilities if done server side **[Brendel -- Col. 5 lines 46-48]**.

In view of the teachings of He, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the tagging of start packets to indicate load balancing along with forwarding the packets to the server, as taught by He, into the invention of Brendel, in order to increase the power and capabilities of the load balancer and to give the user more control to let he/she decide if their requests should be load balanced.

Regarding claim 76, Brendel-He teach the invention substantially as claimed, as aforementioned in claim 73 above, including wherein the start packet is altered by adding a tag to or modifying the tag of the start packet to indicate that the start packet should be forwarded to any replica that duplicates data content of the server [**He – Col. 3 lines 49-51, Col. 4 lines 1-4 and Col. 11 lines 23-27 – System allows client to decide whether requests are to be “load balanced” or not, i.e. tagged. Hence, before arriving at the server side, a tag or bit in the packet would be required to have been set to identify whether or not the request is the be “load balanced”. By setting this, LB server will forward the packet to any one of the servers amongst the group of servers it load balances**].

Regarding claim 77, Brendel-He teach the invention substantially as claimed, as aforementioned in claim 73 above, including wherein the subsequent packet is altered by replacing the subsequent packet with a destination identifier of the start packet [**Brendel -- Col. 11 lines 46-50 – After receiving the SYN + ACK packet, subsequent requests are intercepted and the destination address is changed to the relocated server, i.e. replica address**].

Regarding claim 79, Brendel teaches a computer system operable to facilitate redirection of traffic between a server and a client to between the client and a nearest replica selected from a plurality of replicas, the computer system comprising:

a memory; and

a processor coupled to the memory,

wherein at least one of the memory and the processor are adapted to provide [Brendel -- Claim 13 Col. 18 lines 52-67 -- It is obvious to one of ordinary skill in the art of computers that all computers consist of one or more processors, memory, and various other components. Therefore, by teaching a computer system, it is obvious that a memory and a processor coupled to the memory are taught]:

at the client side, receiving a packet that is traveling between a client and a server or between the client and a replica [Brendel -- Figure 8, Col. 11 lines 20-21 and Col. 16 lines 16-19 -- First SYN packet, i.e. start packet, is generated and intercepted by the client side dispatcher. This packet obviously contains a destination identifier in order for it to be routed to its destination. The client side dispatcher can be located on a separate machine from the client].

The remaining limitations of claim 79 are similar to the limitations of claim 73 above.

Therefore, they are rejected under the same rationale.

Regarding claims 82 and 83, these are computer system claims corresponding to the method claimed in claims 76 and 77 above. They have similar limitations; therefore, claims 82 and 83 are rejected under the same rationale.

Regarding claim 85, Brendel teaches a computer program product comprising:

at least one computer readable medium; computer program instructions stored within at least one computer readable product [Brendel -- Claim 13 Col. 18 lines 52-67 -- It is obvious to

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one of ordinary skill in the art of computers that all computers consist of memory storing code/instructions for executing processes. Therefore, by teaching a computer system, it is obvious that a memory and instructions/code are taught] configured to cause a processing device to:

receive a packet from a client, the packet having a destination identifier associated with a server **[Brendel -- Figure 8, Col. 11 lines 20-21 and Col. 16 lines 16-19 -- First SYN packet, i.e. start packet, is generated and intercepted by the client side dispatcher. This packet obviously contains a destination identifier in order for it to be routed to its destination. The client side dispatcher can be located on a separate machine from the client].**

The remaining limitations of claim 85 are similar to the limitations of claim 73 above.

Therefore, they are rejected under the same rationale.

Regarding claims 88 and 89, these are computer program product claims corresponding to the method claimed in claims 76 and 77 above. They have similar limitations; therefore, claims 88 and 89 are rejected under the same rationale.

Regarding claim 92, this is an apparatus claim corresponding to the method claimed in claim 73 above. It has similar limitations; therefore, claim 92 is rejected under the same rationale.

Response to Arguments

9. Applicant's arguments filed May 7, 2004 have been fully considered but they are not persuasive.

(A) Applicant contends that He fails to teach or suggest tagging or altering requests to indicate that the request should be sent to any replica or server that duplicates the data, whereas, claim 58 calls for this limitation.

In response to argument A, Examiner asserts that the tagging, as taught in He, does in fact allow client requests to be load balanced to any server which can service the request, i.e. duplicates the requested data. As pointed out in the rejection above, packets from a client can be "load balanced" or not "load balanced" at the client's discretion. See Col. 11 lines 23-27. In order for packets to be recognized by the LB (load balance) server, it is required, as pointed out above, that a bit or tag must be set or marked in the packet to indicate the desired action. Once this packet is tagged, LB Server will receive the packet and distribute it to one of the servers in its group. See Col. 3 lines 42-44, lines 49-51 and Col. 4 lines 1-4. Thus, the load balancer, based upon some statistics or load information, chooses any one of the servers in the group to service the client's request. See Col. 4 lines 5-40. Please see rejection above for further clarification. Thus, the Examiner accordingly demurs to this assertion as He et al. explicitly shows that the request can be service by any server in the group which has the ability to service it's request.

- (B) Applicant contends that He et al. fails to show that only the first acknowledgement received is forwarded to the client and the rest are inhibited, whereas claim 58 calls for this limitation.

In response to argument B, Examiner asserts that this limitation is found in Brendel and that it is the combination of Brendel and He which teach this limitation. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Brendel teaches (See Col. 16 lines 16-19) that the dispatcher can reside on another machine separate from the client. With these machines separate, any subsequent acknowledgement packets are received by the dispatcher and a reset command is given to close any connections with these servers. See Col. 11 lines 40-43 and Figure 8. Thus, the subsequent acknowledgement packets would never reach the client as the dispatcher would block them and cut off the connection with the server sending these subsequent ACK packets. Please see rejection above for further clarification.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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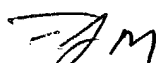
- Bruck et al. (U.S. 6,691,165) discloses a load balancing server system for a distributed server cluster consisting of a front-end and a back-end.
- Oehrke et al. (U.S. 6,735,631) discloses a method and system for providing load-balancing servers through the use of a redirector to balance traffic server-side between a plurality of application processing servers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas J. Mauro Jr. whose telephone number is 703-605-1234.

The examiner can normally be reached on M-F 8:00a.m. - 4:30p.m..

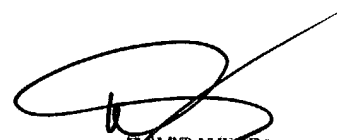
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on 703-308-5221. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TJM

June 30, 2004



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